

CRaTER Verification Procedure/Report

Title: (8.3.7) Energy deposition resolution

Document 32-06020.27

Reference: 32-01205 Instrument Requirements Document Section 8.3.7
 Requirement: The pulse height analysis of the energy deposited in each detector shall have an energy resolution better than 1/200 the maximum energy measured by that detector.
 Procedure: The detector provider will produce specifications of the energy resolution of each of the detectors, as determined with a pulser test and with an alpha source. The energy deposition resolution will be determined through analysis of pulsar data and through the use of line-emission from gamma-ray sources.

Results:

The italicized row in this table shows the percentage error in LET for each detector using the detector calibration at MGH in the data files CRA0220070915165634L0, CRA0220070915163126L0, and CRA0220070915155914L0. The one-sigma uncertainties in the gain and offset of each detector were converted into an uncertainty in energy deposit. The energy uncertainties of 0.17, 0.20, 0.20, 0.19, 0.18, and 0.20 are all less than the desired value of 0.5%.

Param	Units	Required	D1	D2	D3	D4	D5	D6
Thickness	microns	150/1000	148	1000	149	1000	149	1000
Gain	KeV/ADU		81.55	22.21	82.90	22.44	80.60	22.20
Offset	ADU		-0.34	0.91	-0.47	-2.24	-0.41	0.88
Min E	KeV	250	435.83	90.82	453.54	162.36	436.43	91.57
Max E	MeV		334.04	90.97	339.61	91.95	330.18	90.91
<i>E Error</i>	<i>MeV</i>	<i>0.50%</i>	<i>0.17</i>	<i>0.20</i>	<i>0.20</i>	<i>0.19</i>	<i>0.18</i>	<i>0.20</i>
Min LET	KeV/micron	0.25	2.94	0.09	3.04	0.16	2.93	0.09
Max LET	MeV/micron	2	2.26	0.09	2.28	0.09	2.22	0.09

S/N: 02

Passed/Failed: Passed

Comments:

Performed by: JCKasper

R&QA: _____

Date: 29 November 2007

Date: _____